

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of:

Group Art Unit: Unknown

**Christoph Rüdinger et al.**

Examiner: Unknown

Serial No.: Unknown

(U.S. National Phase of PCT/EP2004/013724)

Filed: Filed Herewith

(International Filing Date December 2, 2004)

For: **METHOD FOR THE PRODUCTION  
OF ISOCYANATOORGANOSILANES**

Attorney Docket No.: WAS0742PUSA

**PRELIMINARY AMENDMENT UNDER 37 C.F.R. § 1.115**

MAIL STOP PCT  
Commissioner for Patents  
U.S. Patent & Trademark Office  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Following the filing of the application but prior to calculation of the filing fee and examination on the merits, kindly amend the application as follows.

**Amendments to the Specification:**

*On page 1, after the title, insert the following new paragraph:*

**CROSS-REFERENCE TO RELATED APPLICATION**

This application is the U.S. national phase of PCT Appln. No. PCT/EP2004/013724 filed December 2, 2004, which claims priority to German application 103 58 061.1 filed December 11, 2003.

*At page 1, line 2, please add the following heading and subheading as shown below:*

**BACKGROUND OF THE INVENTION****1. Field of the Invention**

*At page 1, line 5, please add the following subheading as shown below:*

**2. Description of the Related Art**

*At page 2, line 13, please add the following heading as shown below:*

**SUMMARY OF THE INVENTION**

*At page 2, lines 14 and 18, please amend the paragraphs as shown below:*

The object was therefore to provide a further process for preparing isocyanoatoorganosilanes which solves the problems known from the prior art. ~~The This and other objects is are~~ achieved by ~~the thermolysis of carbamatoorganosilanes being~~ induced by exposure to microwave radiation.

*At page 2, line 20, please add the following heading as shown below:*

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

*At page 3, at line 31, please amend the following paragraph as shown below:*

As spacer **R<sup>1</sup>** between the organosilyl group and the carbamato group, use can generally be made of linear or branched saturated or unsaturated C<sub>1</sub>-C<sub>6</sub>-hydrocarbon groups. Preferred spacers **R<sup>1</sup>** are alkyl alkylene radicals, in particular linear alkyl alkylene radicals; particularly most preferably, use is made of methylene, ethylene and propylene.

*At page 9, line 14, please amend the paragraph as shown below:*

The inventive process is preferably carried out in a pressure range of ~~0.01-100~~ 0.01-100 bar, particularly more preferably at ~~0.5-40~~ 0.5-40 bar, in particular in a range of 1-10 bar.

**Amendments to the Claims:**

*This listing of claims will replace all prior versions, and listings, of claims in the application:*

Kindly cancel original claims 1 - 15 without prejudice, in favor of new claims 16 - 31.

Claims 1 - 15. (Cancelled)

16. (New). A process for preparing isocyanoatoorganosilanes by thermolysis of carbamatoorganosilanes, wherein the thermolysis takes place with exposure to microwave radiation.

17. (New) The process of claim 1, wherein isocyanoatoorganosilanes of the formula (1) are prepared



where

R is a monovalent C<sub>1</sub>-C<sub>10</sub>-alkyl radical,

R<sup>1</sup> is a divalent C<sub>1</sub>-C<sub>6</sub>-hydrocarbon radical and

R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> are in each case independently of one another, a methyl, ethyl, n-propyl, isopropyl, methoxy, ethoxy, n-propoxy or isopropoxy radical,

by thermolysis of carbamatoorganosilanes of the formula (2)



18. (New) The process of claim 16, wherein the thermolysis takes place in the presence of a catalyst.

19. (New) The process of claim 17, wherein the thermolysis takes place in the presence of a catalyst.

20. (New) The process of claim 18, wherein the catalyst is a homogeneous catalyst.

21. (New) The process of claim 20, wherein the catalyst comprises one or more compounds selected from the group consisting of soluble compounds of tin, lead, cadmium, antimony, bismuth, titanium, zirconium, niobium, iron, cobalt, manganese, chromium, molybdenum, tungsten, nickel, copper, zinc, and soluble organic nitrogen bases.

22. (New) The process of claim 20, wherein the catalyst comprises one or more compounds selected from the group consisting of 1,4-diazabicyclo[2.2.2]octane, dibutyltin dilaurate, dibutyltin maleate, dibutyltin diacetate and dimethyltin dichloride.

23. (New) The process of claim 18, wherein the catalyst is a heterogeneous catalyst.

24. (New) The process of claim 23, wherein the catalyst comprises a metal or compound thereof, the metal selected from the group consisting of Sn(I), Sn(II), Pb(II), Zn(II), Cu(I), Cu(II), Co(I), Co(II), Na, K, Li, Rb, Cs, Sr, Ba, Mg, Ca, Cr, Mo, Ti, V, W, Ce, Fe, Ni, Si, Al, Ge, Ga, In, Sc, Y, La and lanthanides, Pd, Pt, Co, Rh, Cu, Ag, Au, Zn, Cr, Mo, W, Cd, Fe, N, O, B, C, and mixtures and alloys containing the abovementioned elements.

25. (New) The process of claim 23, wherein the catalyst comprises at least one oxide, hydroxide, oxyhydroxide, mixed oxide, acetate, formate, oxalate, tartrate, citrate, nitrate, carbonate, or mixtures of the above-mentioned compounds, of one or more elements

selected from the group consisting of Sn(I), Sn(II), Pb(II), Zn(II), Cu(I), Cu(II), Co(I), Co(II), Na, K, Li, Rb, Cs, Sr, Ba, Mg, Ca, Cr, Mo, Ti, V, W, Ce, Fe, Ni, Si, Al, Ge, Ga, In, Sc, Y, La and lanthanides, Pd, Pt, Rh, Ag, Au and Cd.

26. (New) The process as claimed in claim 23, wherein the catalyst comprises one or more compounds selected from the group consisting of  $TiO_2$ ,  $ZrO_2$ ,  $HfO_2$ ,  $Al_2O_3$ ,  $BaO$ ,  $CaO$ ,  $MgO$ ,  $CeO_2$ ,  $La_2O_3$ ,  $Y_2O_3$ ,  $Sm_2O_3$ ,  $Yb_2O_3$ ,  $Cr_2O_3$ ,  $ZnO$ ,  $V_2O_4$ ,  $MnO_2$ ,  $NiO$ ,  $In_2O_3$ ,  $Ga_2O_3$ ,  $GeO_2$ ,  $FeO$ ,  $Fe_2O_3$ ,  $Fe_3O_4$ ,  $CuO$ ,  $Co_3O_4$ ,  $Fe(MoO_4)_3$ ,  $MgO/CsOH$ ,  $MgO/NaOH$ , aluminosilicates, zeolites, cordierite of the composition  $2MgO \cdot 2Al_2O_3 \cdot 5SiO_2$ , heteropolyacids, carbon, transition metal nitrides, transition metal borides, transition metal silicides and carbides.

27. (New) The process of claim 23, wherein the catalysts are provided on a support.

28. (New) The process of claim 27, wherein as a catalyst support, an inert refractory material is employed.

29. (New) The process of claim 26, wherein as a catalyst support, oxidic and nonoxidic ceramics,  $SiO_2$ , carbon, aluminosilicates, magnesium aluminosilicates or resistant metallic materials are used.

30. (New) The process of claim 26, wherein catalyst supports are in the form of irregular granules, spheres, rings, half-rings, saddles, cylinders, trilobes, or monoliths.

31. (New) The process of claim 16, wherein a gas-phase reactor containing a heterogeneous catalyst is located downstream of the microwave reaction chamber.

**Amendments to the Abstract:**

Kindly add the Abstract attached as a separate page hereto.

**Remarks**

The specification has been amended to incorporate United States Patent and Trademark Office recommended headings and subheadings, and to conform the specification to U.S. practice. The claims have been rewritten in U.S. format, eliminating multiple dependent claims. An Abstract has been added.

Early favorable consideration is respectfully requested

Respectfully submitted,  
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